

CLAIMS

WHAT IS CLAIMED IS:

1. A method for producing a filtration membrane, the method comprising:  
applying an aqueous amine solution to a surface of said porous substrate, said  
aqueous amine solution including an amine, propionic acid and a non-amine base;  
applying an acyl halide solution to be in contact with said aqueous amine solution  
along an interface, said acyl halide solution including an acyl halide and an organic  
solvent; and  
causing polymerization to occur at said interface.
2. The method according to claim 1, wherein applying said aqueous amine solution includes wetting a portion of said porous substrate with said aqueous amine solution.
3. The method according to claim 1, wherein said aqueous amine solution is applied in a layer having a first surface in contact with said substrate and a second surface, and further wherein said acyl halide solution is applied to be in contact with said second surface to form said interface.
4. The method according to claim 1, wherein said amine is one of piperazine and m-poly(phenylenediamine).
5. The method according to claim 1, wherein said non-amine base is sodium hydroxide.
6. The method according to claim 1, further including preparing said aqueous amine solution from said amine and a propionate salt.
7. The method according to claim 1, wherein said acyl halide is trimesoyl chloride.
8. The method according to claim 1, wherein said organic solvent is immiscible in water.

9. The method according to claim 8, wherein said organic solvent is naphtha.
10. The method according to claim 1, wherein said porous substrate is comprised of polysulfone.
11. The method according to claim 1, further including drying said membrane after said polymerization has occurred.
12. A filtration membrane for separating a contaminant from a feed fluid to produce a product fluid, said membrane comprising:
- a porous substrate having a first surface; and
  - a product fluid-permeable layer cast on said first surface of said porous substrate, said layer comprising the interfacial polymerization reaction product of an aqueous amine solution and an acyl halide solution, wherein
    - said aqueous amine solution includes an amine, propionic acid and a non-amine base, and
    - said acyl halide solution includes an acyl halide and an organic solvent.
13. The filtration membrane according to claim 12, wherein said layer has pores of a size suitable for nanofiltration.
14. The filtration membrane according to claim 12, wherein said layer has pores of a size suitable for reverse osmosis filtration.
15. The method according to claim 12, wherein said amine is one of piperazine and m-poly(phenylenediamine).
16. The method according to claim 12, wherein said non-amine base is sodium hydroxide.
17. The method according to claim 12, wherein said aqueous amine solution is prepared by dissolving said amine and a propionate salt in water.

18. The method according to claim 12, wherein said acyl halide is trimesoyl chloride.
19. The method according to claim 12, wherein said organic solvent is immiscible in water.
20. The method according to claim 19, wherein said organic solvent is naphtha.
21. The filtration membrane according to claim 12, wherein said porous substrate is  
5 comprised of polysulfone.